



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,480	10/16/2003	Katsunori Nishimura	520.43216X00	8057
20457 7590 08/21/2007 ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			EXAMINER CHUO, TONY SHENG HSIANG	
			ART UNIT 1745	PAPER NUMBER
			MAIL DATE 08/21/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/686,480	NISHIMURA ET AL.	
	Examiner	Art Unit	
	Tony Chuo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-9, 11-13 and 16-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-9, 11-13 and 16-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/21/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Claims 2-9, 11-13, 16-40 are currently pending. Claims 1, 10, 14, and 15 have been cancelled. New claims 24-40 have been added. The previous objection to claim 22 is withdrawn. The previously stated 112 rejections of claims 11 and 16 are withdrawn. However, the previously stated 112 rejections of claim 19 are maintained. The amended claims do overcome the previously stated 103 rejections. However, upon further consideration, claims 2-9, 11-13, and 16-40 are rejected under the following new 112, 102, and 103 rejections. This action is made FINAL as necessitated by the amendment.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 26, 27, 35, and 36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitations "water-retaining layer adjoins the anode or cathode" and "water-permeable layer adjoins the anode or

Art Unit: 1745

cathode" are not supported by the specification because the drawings show the water-retaining layer and water-permeable layer as being part of the humidifier and not adjoined to the anode or cathode.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear whether the opposed surface of the porous member is the water supplying surface or the surface opposite to the water supplying surface. As shown in Figure 1, water retained in the water-retaining layer is supplied to the flow channels from the water supplying surface and not the opposed surface of the porous member.

6. Claim 19 recites the limitation "the opposed surface" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 33, 34, 37, 39, and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawazu (JP 08-138704).

Regarding claim 33, the Kawazu reference discloses a fuel cell assembly comprising: a humidifier "200" and a plurality of fuel cell units "10", wherein each of the fuel cell units comprises an electrolyte membrane "11", a cathode "12" adjacent to one face of the membrane, an anode "13" adjacent to the other face of the membrane, a gas diffusion layer adjacent to the cathode, a gas diffusion layer adjacent to the anode, a separator "14" having a flow channel for flowing oxidizing gas, which is adjacent to the cathode, and a separator "15" having a flow channel for flowing fuel gas, which is adjacent to the anode, wherein the humidifier comprises a porous water-retaining layer "610" for retaining water supplied thereto, wherein the water retaining layer being in contact with a channel containing water, and wherein the humidifier adjoins an end of the plurality of the fuel cell units in such as relation that the water-retaining layer faces the flow channels thereby to transfer water introduced into the water-retaining layer to the fuel gas and oxidizing gas flowing in the flow channels (See paragraphs [0031],[0033],[0034],[0036],[0040], and Drawings 1, 3, and 5).

Regarding claim 34, it also discloses a humidifier that further comprises a water permeable membrane "602" located adjacent to the end of the plurality of fuel cell units and between the plurality of fuel cell units and the water-retaining layer "610" (See Drawing 5).

Regarding claims 37 and 39, it also discloses a water-retaining layer "610" that takes water thereinto at a peripheral portion thereof, where the water-retaining layer is in contact with cooling water (See Drawing 5).

Regarding claim 40, it also discloses a fuel cell assembly that has a single humidification unit "200" (See Drawing 1).

9. Claims 33, 34, and 37-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Mizuno (JP 07-135012).

Regarding claim 33, the Mizuno reference discloses a fuel cell assembly comprising: a humidifier "30" and a plurality of fuel cell units "100", wherein each of the fuel cell units comprises an electrolyte membrane "110", a cathode "130" adjacent to one face of the membrane, an anode "120" adjacent to the other face of the membrane, a separator "150" having a flow channel for flowing oxidizing gas, which is adjacent to the cathode, and a separator "140" having a flow channel for flowing fuel gas, which is adjacent to the anode, wherein the humidifier comprises a micro porous film "312" for retaining water supplied thereto, wherein the water retaining layer being in contact with a channel "308" containing water, and wherein the humidifier adjoins an end of the plurality of the fuel cell units in such as relation that the micro porous film faces the flow channels thereby to transfer water introduced into the microporous to the fuel gas and oxidizing gas flowing in the flow channels (See paragraphs [0013],[0015],[0016],[0019] and Drawings 1-3).

Regarding claim 34, it also discloses a humidifier that further comprises a hydrophilic layer "314" located adjacent to the end of the plurality of fuel cell units and between the plurality of fuel cell units and the micro porous film "312" (See Drawing 3).

Art Unit: 1745

Regarding claims 37 and 39, it also discloses a micro porous film "312" that takes water thereinto at a peripheral portion thereof, where the micro porous film is in contact with cooling water (See Drawing 3).

Regarding claim 38, it also discloses a micro porous film "312" that is made of Celgard which is a hydrophilic polymer material (See paragraph [0019])

Regarding claim 40, it also discloses a fuel cell assembly that has a single humidification unit "200" (See Drawing 1).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawazu (JP 08-138704) in view of Kanazawa (US 2003/0087982). The Kawazu reference is applied to claim 38 for reasons stated above. However, Kawazu does not expressly teach a water retaining layer that is made of a hydrophilic polymer material. The Kanazawa reference discloses polymeric materials which are treated to be hydrophilic that have improved properties of water absorption (See Abstract). Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Kanazawa indicates that hydrophilic polymer material is a suitable material for use as a water retention material.

Art Unit: 1745

The selection of a known material based on its suitability for its intended use has generally been held to be *prima facie* obvious (MPEP §2144.07). As such, it would be obvious to use a hydrophilic polymer material.

12. Claims 2, 4-6, 8, 11-13, 16-22, 24-29, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawazu (JP 08-138704) in view of Yi et al (US 2001/0004501).

Regarding claims 13, 16, 17, 19, 22, and 24, the Kawazu reference discloses a fuel cell assembly comprising: and a stack of fuel cell units "10", wherein each of the fuel cell units comprises an electrolyte membrane "11", a cathode "12" adjacent to one face of the membrane, an anode "13" adjacent to the other face of the membrane, a gas diffusion layer adjacent to the cathode, a gas diffusion layer adjacent to the anode, a separator "14" having a flow channel for flowing oxidizing gas, which is adjacent to the cathode, and a separator "15" having a flow channel for flowing fuel gas, which is adjacent to the anode and a humidifier "200" connected to one end of the stack, wherein the humidifier comprises a porous water-retaining layer "610" for retaining water supplied thereto, wherein the water retaining layer being in contact with a channel containing water, wherein the water-retaining layer faces the flow channels thereby to transfer water introduced into the water-retaining layer to the fuel gas, oxidizing gas, and membrane electrolyte, and wherein the water-retaining layer has one surface to supply water to the flow channels and a surface opposite to the water supplying surface that supplies water to the water-retaining layer (See paragraphs [0031],[0033],[0034],[0036],[0040], and Drawings 1, 3, and 5).

Art Unit: 1745

Regarding claim 4, it also discloses a water permeable membrane "602" that has the function to transmit water that is formed on porous material of the water-retaining layer "610" (See paragraph [0062] and Drawing 5).

Regarding claims 5 and 6, it also discloses a water permeable membrane "602" that has an average pore size of 0.05 μm , a thickness of 12-100 μm , and a porosity of more than 50% (See paragraphs [0037],[0063]).

Regarding claim 11, it also discloses a hydrogen gas storage tub (not shown) that is connected to the fuel cell assembly with a hydrogen gas passageway "540" through which the hydrogen flows (See paragraph [0044]).

Regarding claim 2, 8, 18, and 21, the water-retaining layer is construed as the porous membrane "602" that is made of a hydrophilic polymer material (See paragraph [0015]). It also discloses a porous carbon "610" that controls the flow rate of water to the porous membrane "602" (See Drawing 5).

Regarding claim 20, it also discloses two water retaining layers "610", one for the hydrogen gas humidifier "110" and one for the oxygen gas humidifier "120" (See Drawings 1 and 5).

Regarding claim 25, it also discloses a water permeable membrane "602" located adjacent to the end of the plurality of fuel cell units and between the plurality of fuel cell units and the water-retaining layer "610" (See Drawings 1 and 5).

Regarding claims 28, 29, and 31, it also discloses a water-retaining layer "610" that is in contact with water in a cooling water channel and takes water thereinto at a peripheral portion thereof (See Drawing 5).

Art Unit: 1745

Regarding claim 32, it also discloses a fuel cell assembly that has a single humidification unit "200" (See Drawing 1).

However, Kawazu does not expressly teach a water-retaining layer that has a mean micro-pore diameter of 10 to 300 μm and a thickness of 50 to 300 μm , whereby water is retained by capillary force by the water-retaining layer when the stack of unit fuel cells is not working and is taken by gas fed to the anode and gas fed to the cathode against the capillary force when the stack of unit fuel cells is working; a water-retaining layer that adjoins the anode or cathode; or a water permeable layer that adjoins the anode or cathode. The Yi reference discloses hydrophilic substrate layers "100" & "102" that functions as water-retaining layers that humidify the anode gas and cathode gas that are comprised of a porous carbon-carbon fibrous composite having a thickness of about 175 microns and a pore size of about 27 microns to 37 microns (See paragraph [0066]). It also discloses water-retaining layers "100" & "102" that adjoin the anode "72" and cathode "74" (See Figure 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Kawazu humidifier to replace the porous carbon sheet "610" with a water-retaining layer that has a mean micro-pore diameter of 10 to 300 μm and a thickness of 50 to 300 μm ; a water-retaining layer that adjoins the anode or cathode; and a water permeable layer that adjoins the anode or cathode in order to maintain proper water balance in the anode and cathode, thereby prolonging the fuel cell's life, as well as improving its electrical efficiency and to minimize the thickness of the fuel cell stack (See paragraph [0010]).

Art Unit: 1745

Examiner's note: It is inherent that water is retained by capillary force by the Yi hydrophilic substrate layer when the stack of unit fuel cells is not working and is taken by gas fed to the anode and gas fed to the cathode against the capillary force when the stack of unit fuel cells is working.

13. Claims 2, 4, 11-13, 16-20, 22, 24-29, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno (JP 07-135012) in view of Yi et al (US 2001/0004501).

Regarding claims 13, 16-19, 22, and 24, the Mizuno reference discloses a fuel cell assembly comprising: a humidifier "30" and a plurality of fuel cell units "100", wherein each of the fuel cell units comprises an electrolyte membrane "110", a cathode "130" adjacent to one face of the membrane, an anode "120" adjacent to the other face of the membrane, a separator "150" having a flow channel for flowing oxidizing gas, which is adjacent to the cathode, and a separator "140" having a flow channel for flowing fuel gas, which is adjacent to the anode, wherein the humidifier comprises a micro porous film "312" for retaining water supplied thereto, wherein the water retaining layer being in contact with a channel "308" containing water, and wherein the humidifier adjoins an end of the plurality of the fuel cell units in such as relation that the micro porous film faces the flow channels thereby to transfer water introduced into the microporous to the fuel gas and oxidizing gas flowing in the flow channels (See paragraphs [0013],[0015],[0016],[0019] and Drawings 1-3).

Regarding claim 2, it also discloses a micro porous film "312" that is made of a hydrophilic polymer material (See paragraph [0019]).

Art Unit: 1745

Regarding claim 4, it also discloses a hydrophilic layer "314" that has the function to transmit water that is formed on porous material of the micro porous film "312" (See Drawing 3).

Regarding claim 11, it also discloses a hydrogen gas storage tub (not shown) that is connected to the fuel cell assembly with a hydrogen gas passageway "620" through which the hydrogen flows (See paragraph [0027]).

Regarding claim 20, it also discloses two micro porous films "312" (See Drawing 3).

Regarding claim 25, it also discloses a hydrophilic layer "314" located adjacent to the end of the plurality of fuel cell units and between the plurality of fuel cell units and the micro porous film "312" (See Drawings 1 and 3).

Regarding claims 28, 29, and 31, it also discloses a micro porous film "312" that is in contact with water in a cooling water channel and takes water thereinto at a peripheral portion thereof (See Drawing 3).

Regarding claim 32, it also discloses a fuel cell assembly that has a single humidification unit "30" (See Drawing 1).

However, Mizuno does not expressly teach a water-retaining layer that has a mean micro-pore diameter of 10 to 300 μm and a thickness of 50 to 300 μm , whereby water is retained by capillary force by the water-retaining layer when the stack of unit fuel cells is not working and is taken by gas fed to the anode and gas fed to the cathode against the capillary force when the stack of unit fuel cells is working; a water-retaining layer that adjoins the anode or cathode; or a water permeable layer that adjoins the

Art Unit: 1745

anode or cathode. The Yi reference discloses hydrophilic substrate layers "100" & "102" that functions as water-retaining layers that humidify the anode gas and cathode gas that are comprised of a porous carbon-carbon fibrous composite having a thickness of about 175 microns and a pore size of about 27 microns to 37 microns (See paragraph [0066]). It also discloses water-retaining layers "100" & "102" that adjoin the anode "72" and cathode "74" (See Figure 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Mizuno humidifier to replace the micro porous film "312" with a water-retaining layer that has a mean micro-pore diameter of 10 to 300 μm and a thickness of 50 to 300 μm ; a water-retaining layer that adjoins the anode or cathode; and a water permeable layer that adjoins the anode or cathode in order to maintain proper water balance in the anode and cathode, thereby prolonging the fuel cell's life, as well as improving its electrical efficiency and to minimize the thickness of the fuel cell stack (See paragraph [0010]).

Examiner's note: It is inherent that water is retained by capillary force by the Yi hydrophilic substrate layer when the stack of unit fuel cells is not working and is taken by gas fed to the anode and gas fed to the cathode against the capillary force when the stack of unit fuel cells is working.

14. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawazu (JP 08-138704) in view of Yi et al (US 2001/0004501). However, Kawazu as modified by Yi et al does not expressly teach the thickness of a humidifying water inlet of the humidifier that is $\frac{1}{2}$ to $\frac{3}{4}$ the thickness of the porous member. However, it would have

Art Unit: 1745

been obvious to one of ordinary skill in the art at the time the invention was made to modify the Kawazu/Yi fuel cell to include a humidifying water inlet having a thickness of $\frac{1}{2}$ to $\frac{3}{4}$ the thickness of the porous member because changes in proportion were held to have been obvious (See *Gardner v. TEC Systems, Inc.* 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984)).

15. Claims 7, 23, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawazu (JP 08-138704) in view of Yi et al (US 2001/0004501) as applied to claims 4, 18, 22, and 24 above, and further in view of Kanazawa (US 2003/0087982). The Kawazu reference is applied to claim 38 for reasons stated above.

However, Kawazu as modified by Yi et al does not expressly teach a water permeable membrane that is one or more membranes that are treated to be hydrophilic and are selected from the group consisting of polytetrafluoroethylene, polystyrene, and copolymers of styrene and butadiene; a water-retaining layer that is a polypropylene non-woven cloth that is made hydrophilic; or a water retaining layer that is made of a hydrophilic polymer material. The Kanazawa reference discloses polymeric materials which are treated to be hydrophilic that have improved properties of water absorption such as polypropylene non-woven fabric and polystyrene (See Abstract, paragraph [0033],[0181]). Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Kanazawa indicates that hydrophilic polymer material such as polypropylene non-woven fabric and polystyrene are suitable materials for use as water retention materials and water permeable materials. The selection of a known material based on its suitability

Art Unit: 1745

for its intended use has generally been held to be *prima facie* obvious (MPEP §2144.07). As such, it would be obvious to use polypropylene non-woven fabric and polystyrene that have been treated to be hydrophilic.

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawazu (JP 08-138704) in view of Yi et al (US 2001/0004501) as applied to claim 18 above, and further in view of Kawazu (JP 08-138705).

However, Kawazu as modified by Yi et al does not expressly teach a porous member that has a hydrogen-oxidizing catalyst dispersed therein. The Kawazu '705 reference discloses a hydrogen oxidizing catalyst "22" that is dispersed on the porous film "21" (See Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Kawazu/Yi fuel cell to include a porous member that has a hydrogen-oxidizing catalyst dispersed therein in order to prevent a drop in the power generating capability of the fuel cell by preventing a drop in humidifying function caused by hydrogen gas penetrating from a gas flow path side to a water flow path side through a porous film.

17. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawazu (JP 08-138704) in view of Yi et al (US 2001/0004501). The Kawazu reference is applied to claim 33 for reasons stated above.

However, Kawazu does not expressly teach a water-retaining layer that adjoins the anode or cathode or a water permeable layer that adjoins the anode or cathode.

Art Unit: 1745

The Yi reference discloses water-retaining layers "100" & "102" that adjoin the anode "72" and cathode "74" (See Figure 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Kawazu fuel cell to include a water-retaining layer that adjoins the anode or cathode and a water permeable layer that adjoins the anode or cathode in order to minimize the thickness of the fuel cell stack.

Response to Arguments

18. Applicant's arguments with respect to claims 2-9, 11-13, 16-23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1745

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC


JONATHAN CREPEAU
PRIMARY EXAMINER